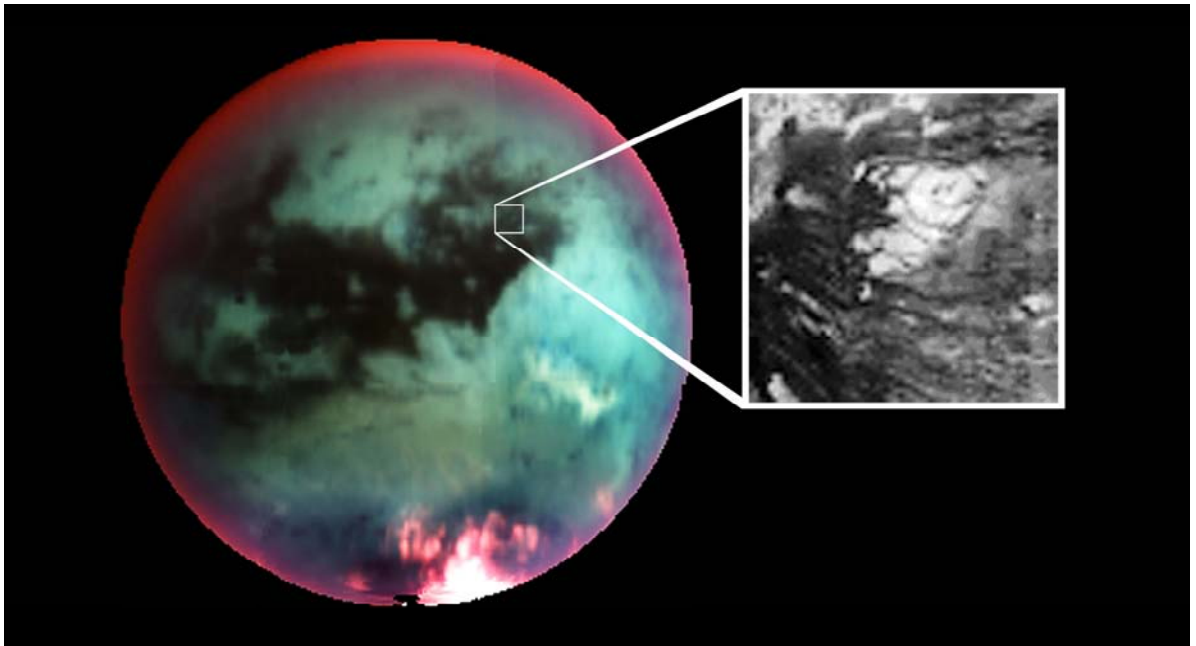


C A S S I N I



TITAN 031TI(T20) MISSION DESCRIPTION

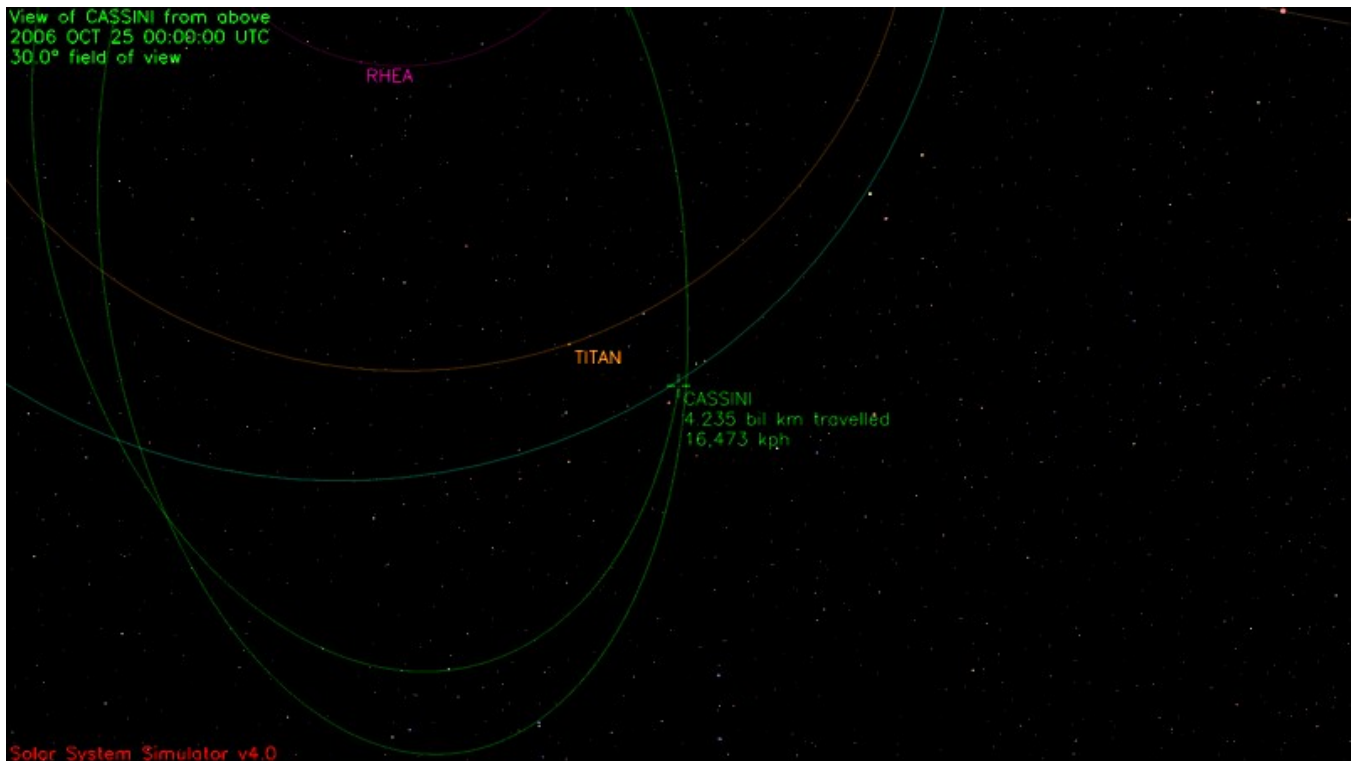
October 2006

Jet Propulsion Laboratory
California Institute of Technology

1.0 OVERVIEW

Only 16 days after Titan-19, Cassini returns to Titan for its twenty-first targeted encounter. The closest approach to Titan occurs on Wednesday, October 25, 2006, at 15:58:07 spacecraft time at an altitude of 1030 kilometers (640 miles) above the surface and at a speed of 5.99 kilometers per second (13,400 mph). The latitude at closest approach is 7.5° and the encounter occurs on orbit number 31. The data will be played back on Friday, October 26, 2006.

This encounter is set up with two maneuvers: an apoapsis maneuver on October 17, and an approach maneuver, scheduled for October 22. This inbound Titan encounter occurs about 2 days before Saturn closest approach.



1.1 TITAN OVERVIEW

If Titan were in orbit around the Sun, it would likely stand out as the most important object in the solar system for humans to explore. Titan, the size of a terrestrial planet, has a dense atmosphere of nitrogen and methane and a surface covered with organic material. It is

Titan that is arguably Earth's sister world and the Cassini-Huygens mission considers Titan among its highest priorities.

Although it is far colder and lacks liquid water, the chemical composition of Titan's atmosphere resembles that of early Earth. This, along with the organic chemistry that takes place in Titan's atmosphere, prompts scientists to believe that Titan could provide a laboratory for seeking insight into the origins of life on Earth. Data from the Huygens probe, which touched down on Titan's surface in January 2005, and the Cassini orbiter has shown that many of the processes that occur on Earth also apparently take place on Titan – wind, rain, volcanism, tectonic activity, as well as river channels, and drainage patterns all seem to contribute in shaping Titan's surface. However, at an inhospitable -290 degrees Fahrenheit (-179 degrees Celsius), the chemistry that drives these processes is fundamentally different from Earth. For example it is methane that performs many of the same functions on Titan that water does on Earth.

The Huygens probe landed near a bright region now called Adiri, and it photographed light hills with dark river beds that empty into a dark plain. It was believed that this dark plain could be a lake or at least a muddy material, but it is now known that Huygens landed in the dark region, and it is solid. Scientists believe it only rains occasionally on Titan, but the rains are extremely fierce when they come.

Only a small number of impact craters have been discovered. This suggests that Titan's surface is constantly being resurfaced by a fluid mixture of water and possibly ammonia, believed to be expelled from volcanoes and hot springs. Some surface features, such as lobate flows, appear to be volcanic structures. Volcanism is now believed to be a significant source of methane in Titan's atmosphere. However, there are no oceans of hydrocarbons as previously hypothesized. Dunes cover large areas of the surface.

The Cassini-Huygens mission, using wavelengths ranging from ultraviolet to radio, is methodically and consistently revealing Titan and answering long-held questions regarding Titan's interior, surface, atmosphere, and the complex interaction with Saturn's magnetosphere. While many pieces of the puzzle are yet to be found, with each Titan flyby comes a new data set that furthers our understanding of this world as we attempt to constrain scenarios for the formation and evolution of Titan and its atmosphere.

1.2 T20 SCIENCE HIGHLIGHTS

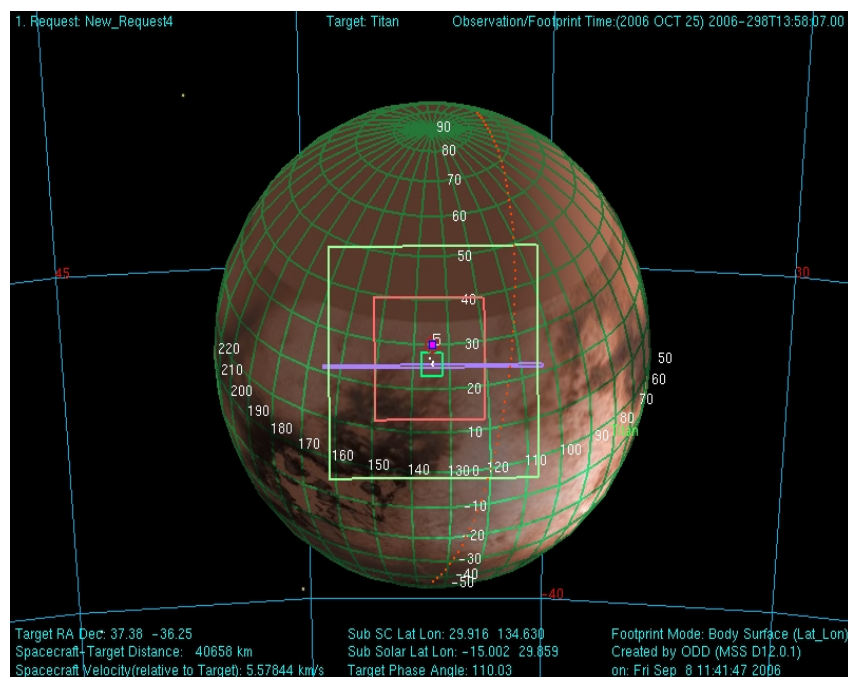
- VIMS: One of the highest resolution VIMS passes in the mission. T20 was highly desired by several teams and after a fierce competition VIMS was chosen. Hopefully able to identify geologic features and their correlation with composition (i.e. “what are the dunes made of”). Surface shadows at this resolution will be very helpful. The highest resolution will be south and to the west of Elba Facula. In addition, VIMS has a full complement of their normal observations (global mapping, searching for hot spots, mid latitude cloud evolution etc).
- ISS: Coverage of Senkyo and Tseghi.
- RADAR: Will attempt a “high-altitude SAR” imaging observation of the Tortola Facula, in addition to inbound radiometry and scatterometry.
- CIRS: The highlight of T20 for CIRS is a limb temperature map in the mid-infrared. These are low spectral resolution maps performed quickly to give a snapshot of the vertical meridional temperatures. CIRS aligns their slit at normal to the surface and marches from equator to pole. They are repeated at regular intervals throughout the mission to search for seasonal changes. They are also used for some limb compositional studies despite low spectral resolution.
- MAG: T20 is suitable to study the wake, tail formation and Saturn facing flank region, where the magnetic field topology may be particularly complex. The very close approach also makes this orbit particularly useful for studies of an internal magnetic field.
- MAPS: In general the flybys around T20 are relatively similar. They approach over 35° latitude, ~135° west longitude (moving from north to south) and local time is around 2 am. The full suite of RPWS, CAPS, MIMI, and INMS taking data during this flyby, and the MAPS instruments get to choose the overall pointing of the spacecraft from -52 minutes down to -10 minutes from closest approach.

1.3 T20 SAMPLE SNAPSHOTS

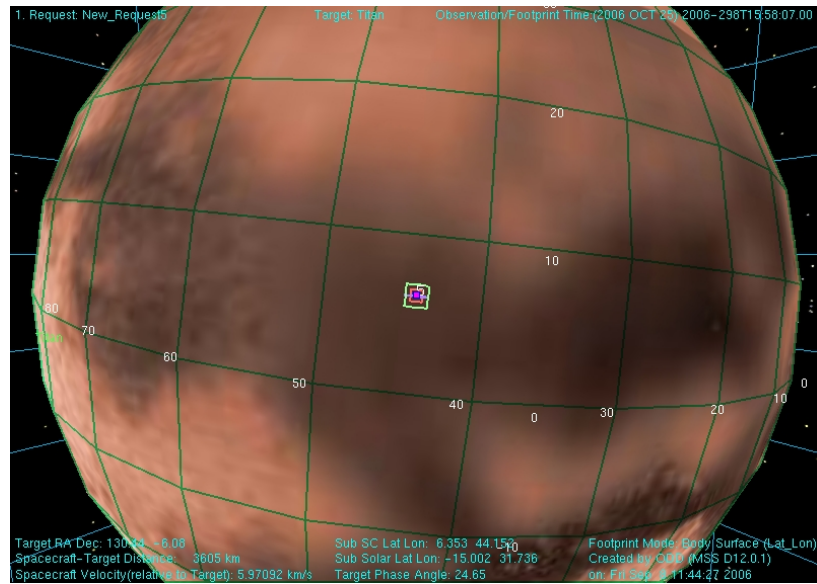
Three views of Titan from Cassini before, during, and after closest approach to Titan are shown below. The views are oriented such that the direction towards the top of the page is aligned with the Titan North Pole. The remote sensing instrument fields of view are shown in all three assuming they are pointed towards the center of Titan. The sizes of these fields of view vary as a function of the distance between Cassini and Titan. A key for use in identifying the instruments fields of view in the figures is listed at the top of the next page.

Key to ORS Instrument Fields of View in Figures

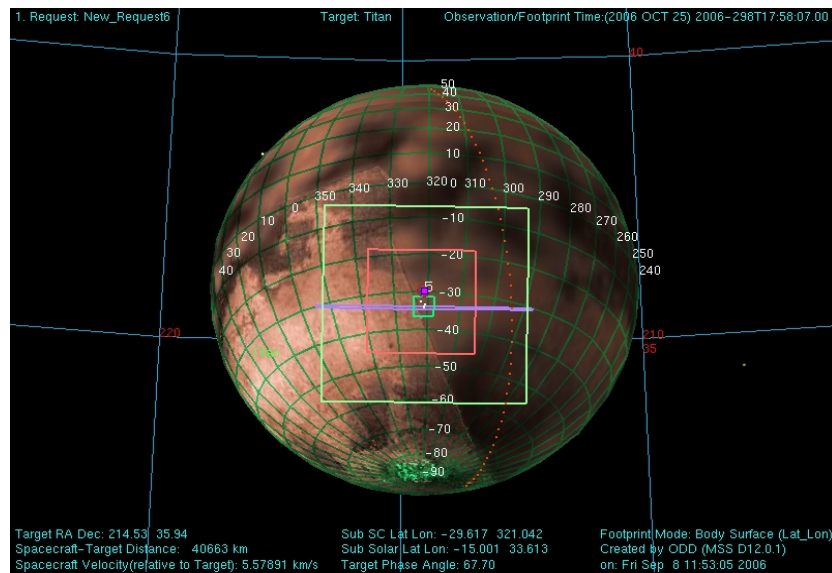
Instrument Field of View	Depiction in Figure
ISS WAC (imaging wide angle camera)	Largest square
VIMS (visual and infrared mapping spectrometer)	Next largest pink square
ISS NAC (imaging narrow angle camera)	Smallest green square
CIRS (composite infrared spectrometer) – Focal Plane 1	Small red circle near ISS_NAC FOV
UVIS (ultraviolet imaging spectrometer)	Vertical purple rectangle centered within largest square



View of Titan from Cassini two hours before Titan-20 closest approach



View of Titan from Cassini at Titan-20 closest approach



View of Titan from Cassini two hours after Titan-20 closest approach

1.4 T20 TIMELINE, GEOMETRY, and PLAYBACK TIMELINE

TIMELINE

Cassini Titan-20 Timeline - October 25, 2006

Colors: yellow = maneuvers; blue = geometry; pink = T20-related; green = data playbacks

Orbiter UTC	Ground UTC	Pacific Time	Time wrt T17	Activity	Description
295T09:26:00	Oct 22 10:45	Sat Oct 22 02:45 AM	T17-03d07h	OTM # Prime	Titan-20 minus 3 day targeting maneuver
295T18:26:00	Oct 22 19:45	Sat Oct 22 11:45 AM	T17-02d22h	Start of Sequence S25	Start of Sequence which contains Titan-20
296T01:56:00	Oct 23 03:15	Sat Oct 22 07:15 PM	T17-02d14h	OTM # Backup	XBAND to Earth
296T10:56:00	Oct 23 12:15	Sun Oct 23 04:15 AM	T17-02d05h	Start of TOST Segment	
297T18:26:00	Oct 24 19:45	Mon Oct 24 11:45 AM	T17-21h32m	Turn cameras to Titan	ISS_NAC to Titan
297T19:18:07	Oct 24 20:37	Mon Oct 24 12:37 PM	T17-20h40m	Titan atmospheric observations	Composition; clouds; global mapping; development and evolution of clouds; haze characterization; photometry
298T08:28:07	Oct 25 09:47	Tue Oct 25 01:47 AM	T17-07h30m	Titan medium resolution surface observations	Identification of geologic features including volcanoes, eolian features, and craters, and their correlation with composition. Search for shadows
298T10:28:07	Oct 25 11:47	Tue Oct 25 03:47 AM	T17-05h30m	RADAR inbound radiometry and scatterometry, and possible high altitude SAR	Observe surface properties (roughness and composition). Attempt a high altitude SAR (image of Titan's surface) over Tortola Facula
298T14:44:07	Oct 25 16:03	Tue Oct 25 08:03 AM	T17-01h14m	Transition to thrusters	Thrusters are needed to compensate for Titan Atmosphere torque and target motion compensation
298T15:06:07	Oct 25 16:25	Tue Oct 25 08:25 AM	T17-00h52m	Observations of Plasma flow	Ideal pointing to capture plasma flow in the field of view of CAPS
298T15:48:07	Oct 25 17:07	Tue Oct 25 09:07 AM	T17-00h10m	Highest Resolution infrared surface observation (compositional map)	Mapping of geology within the context of spectral end members
298T15:58:07	Oct 25 17:17	Tue Oct 25 09:17 AM	T17+00h00m	Titan-20 Flyby Closest approach Time	Altitude = 1030km (640 miles), speed = 5.99 km/s (13,400 miles/hour), high phase inbound, 25 degrees at closest approach, low phase outbound
298T16:18:07	Oct 25 17:37	Tue Oct 25 09:37 AM	T17+00h20m	Transition to Reaction wheels	Wheels are used for greater spacecraft stability.
298T16:40:07	Oct 25 17:59	Tue Oct 25 09:59 AM	T17+00h42m	High resolution infrared surface observation	Identification of geologic features, and their correlation with composition.
298T17:58:07	Oct 25 19:17	Tue Oct 25 11:17 AM	T17+02h00m	Titan surface observation	Coverage of Senkyo and Tsegihi
298T20:28:07	Oct 25 21:47	Tue Oct 25 01:47 PM	T17+04h30m	Titan Atmospheric observation	Mid-IR Limb composition integrations, which have previously yielded information on the vertical profiles of temperature and nitriles
298T23:28:07	Oct 26 00:47	Tue Oct 25 04:47 PM	T17+07h30m	Titan surface observation	Search for hot spots and lightning
298T23:58:07	Oct 26 01:17	Tue Oct 25 05:17 PM	T17+08h00m	Titan surface observation	Cloud evolution
299T02:37:00	Oct 26 03:56	Tue Oct 25 07:56 PM	T17+10h39m	Turn to Earth	XBAND to Earth
299T03:07:00	Oct 26 04:26	Tue Oct 25 08:26 PM	T17+11h09m	Begin playback of T20 data	Madrid 34-meter station
299T07:56:00	Oct 26 09:15	Wed Oct 26 01:15 AM	T17+15h58m	Continue playback of T20 data	Goldstone 70-meter station
300T09:20:00	Oct 27 10:39	Thu Oct 27 02:39 AM	T17+01d17h	Continue playback of T20 data	Goldstone 70-meter station
301T00:10:48	Oct 28 01:29	Thu Oct 27 05:29 PM	T17+02d08h	Saturn Periapse	Periapse R = 4.7 Rs, lat = -26 deg, phase = 16 deg

OWLT (mins)	79
C/A Time	Tue Oct 25 09:17 AM

GEOMETRY TABLE

Event Name: T20_31TI, Targeted Titan, Inbound. 050505 SPK: Table Creation Date (YYMMDD) 050712																		
Event Name at Event Time Only	SCET Date (YYYY-DOYTHH:MM:SS.FF) UTC	SCET Date (MM/DD/YYYY HH:MM:SS) UTC	SCET Date (MM/DD/YYYY HH:MM:SS) ET	Hours wrt Event Epoch	Minutes wrt Event Epoch	S/C Range (km)	S/C Altitude wrt Tri-axial Ellipsoid (km)	S/C North Latitude (deg)	S/C West Longitude SMEQPM Date (deg)	S/C Inertial Velocity (km/s)	S/C Radial Inertial Velocity (km/s)	S/C Tangential Inertial Velocity (km/s)	Central Body Angular Diameter (mrاد)	Phase = Sun-Central Body S/C Angle (deg)	Sun-S/C-Central Body Angle (deg)	S/C Local True Solar Time wrt Central Body (hh:mm)	Sub-solar Latitude wrt Central Body (deg)	Sub-solar West Longitude wrt Central Body SMEQPM Date (deg)
	2006-297T15:53:36.80	24-Oct-06	15:54:41	-24	-1440	483.558.8	480.983.8	28.5	121.3	5.636	-5.625	0.348	10.7	116.3	63.7	04.31	-15.0	9.1
	2006-297T19:53:36.80	24-Oct-06	19:54:41	-20	-1200	402.642.2	400.067.2	28.7	124.4	5.619	-5.613	0.272	12.8	115.8	64.2	04.33	-15.0	12.9
	2006-297T21:53:36.80	24-Oct-06	21:54:41	-18	-1080	362.254.2	359.679.2	28.8	126.0	5.611	-5.606	0.240	14.2	115.6	64.4	04.35	-15.0	14.8
	2006-297T23:53:36.80	24-Oct-06	23:54:41	-16	-960	321.916.9	319.341.9	28.9	127.6	5.603	-5.599	0.212	16.0	115.3	64.7	04.36	-15.0	16.6
	2006-298T01:53:36.80	25-Oct-06	01:54:41	-14	-840	281.631.2	279.056.2	29.0	129.2	5.595	-5.592	0.189	18.3	115.1	64.9	04.37	-15.0	18.5
	2006-298T03:53:36.80	25-Oct-06	03:54:41	-12	-720	241.396.0	238.821.0	29.1	130.8	5.587	-5.585	0.172	21.3	114.8	65.2	04.38	-15.0	20.4
	2006-298T05:53:36.80	25-Oct-06	05:54:41	-10	-600	201.208.3	198.633.3	29.2	132.3	5.581	-5.579	0.165	25.6	114.5	65.5	04.39	-15.0	22.3
	2006-298T07:53:36.80	25-Oct-06	07:54:41	-8	-480	161.062.0	158.487.0	29.3	133.8	5.576	-5.573	0.170	32.0	114.2	65.8	04.41	-15.0	24.2
	2006-298T09:53:36.80	25-Oct-06	09:54:41	-6	-360	120.947.5	118.372.5	29.4	135.1	5.573	-5.570	0.197	42.6	113.7	66.3	04.43	-15.0	26.0
	2006-298T10:53:36.80	25-Oct-06	10:54:41	-5	-300	100.897.8	98.322.8	29.5	135.6	5.574	-5.569	0.225	51.0	113.3	66.7	04.45	-15.0	27.0
	2006-298T11:53:36.80	25-Oct-06	11:54:41	-4	-240	80.850.1	78.275.1	29.6	135.9	5.575	-5.569	0.271	63.7	112.7	67.2	04.48	-15.0	27.9
	2006-298T12:53:36.80	25-Oct-06	12:54:41	-3	-180	60.802.0	58.227.0	29.8	135.8	5.580	-5.569	0.353	84.7	111.9	68.1	04.52	-15.0	28.8
	2006-298T13:53:36.80	25-Oct-06	13:54:41	-2	-120	40.754.1	38.179.1	30.0	134.7	5.592	-5.568	0.521	126.5	110.2	69.8	05.00	-15.0	29.8
	2006-298T14:53:36.80	25-Oct-06	14:54:41	-1	-60	20.741.4	18.166.4	30.6	129.7	5.629	-5.536	1.019	248.9	105.1	74.9	05.24	-15.0	30.7
	2006-298T15:23:36.80	25-Oct-06	15:24:41	-1	-30	10.880.2	8.305.2	31.0	118.9	5.699	-5.358	1.942	477.9	95.7	84.3	06.09	-15.0	31.2
	2006-298T15:38:36.80	25-Oct-06	15:39:41	0	-15	6.262.2	3.687.2	29.5	100.5	5.804	-4.723	3.374	847.5	80.0	100.0	07.23	-15.0	31.4
	2006-298T15:48:36.80	25-Oct-06	15:49:41	0	-5	3.927.5	1.352.5	20.1	68.1	5.950	-2.542	5.379	1430.0	50.2	129.8	09.34	-15.0	31.6
T20_31TI	2006-298T15:53:36.80	25-Oct-06	15:54:41	0	0	3.525.0	950.0	7.5	43.3	5.993	0.000	5.993	1638.1	25.3	154.7	11.13	-15.0	31.7
	2006-298T15:58:36.80	25-Oct-06	15:59:41	0	5	3.927.4	1.352.4	-6.4	20.0	5.950	2.542	5.379	1430.1	14.4	165.6	12.47	-15.0	31.7
	2006-298T16:08:36.80	25-Oct-06	16:09:41	0	15	6.262.1	3.687.1	-20.7	-8.1	5.805	4.724	3.374	847.5	38.4	141.6	14.39	-15.0	31.9
	2006-298T16:23:36.80	25-Oct-06	16:24:41	1	30	10.880.4	8.305.4	-26.4	-24.4	5.699	5.358	1.942	477.9	53.7	126.3	15.46	-15.0	32.1
	2006-298T16:53:36.80	25-Oct-06	16:54:41	1	60	20.742.6	18.167.6	-28.8	-34.5	5.630	5.537	1.018	248.9	63.0	117.0	16.28	-15.0	32.6
	2006-298T17:53:36.80	25-Oct-06	17:54:41	2	120	40.758.3	38.183.3	-29.7	-39.4	5.593	5.569	0.516	126.4	68.0	112.0	16.51	-15.0	33.5
	2006-298T18:53:36.80	25-Oct-06	18:54:41	3	180	60.809.3	58.234.3	-30.0	-40.4	5.580	5.570	0.341	84.7	69.7	110.3	16.59	-15.0	34.5
	2006-298T19:53:36.80	25-Oct-06	19:54:41	4	240	80.859.6	78.284.6	-30.1	-40.4	5.575	5.569	0.251	63.7	70.5	109.5	17.03	-15.0	35.4
	2006-298T20:53:36.80	25-Oct-06	20:54:41	5	300	100.907.9	98.332.9	-30.2	-40.1	5.572	5.569	0.193	51.0	71.0	109.0	17.05	-15.0	36.4
	2006-298T21:53:36.80	25-Oct-06	21:54:41	6	360	120.956.4	118.381.4	-30.2	-39.5	5.571	5.569	0.151	42.6	71.3	108.7	17.07	-15.0	37.3
	2006-298T23:53:36.80	25-Oct-06	23:54:41	8	480	161.064.7	158.489.7	-30.2	-38.0	5.573	5.572	0.089	32.0	71.6	108.3	17.08	-15.0	39.2
	2006-299T01:53:36.80	26-Oct-06	01:54:41	10	600	201.206.4	198.631.4	-30.1	-36.3	5.579	5.579	0.049	25.6	71.8	108.2	17.09	-15.0	41.0
	2006-299T03:53:36.80	26-Oct-06	03:54:41	12	720	241.405.8	238.830.8	-30.1	-34.5	5.589	5.589	0.055	21.3	71.8	108.2	17.09	-15.0	42.9
	2006-299T05:53:36.80	26-Oct-06	05:54:41	14	840	281.691.4	279.116.4	-29.9	-32.5	5.604	5.603	0.103	18.3	71.8	108.2	17.09	-15.0	44.8
	2006-299T07:53:36.80	26-Oct-06	07:54:41	16	960	322.097.4	319.522.4	-29.8	-30.5	5.625	5.622	0.166	16.0	71.7	108.3	17.08	-15.0	46.7
	2006-299T09:53:36.80	26-Oct-06	09:54:41	18	1080	362.665.4	360.090.4	-29.6	-28.5	5.653	5.648	0.240	14.2	71.5	108.4	17.08	-15.0	48.6
	2006-299T11:53:36.80	26-Oct-06	11:54:41	20	1200	403.445.6	400.870.6	-29.4	-26.3	5.691	5.681	0.327	12.8	71.4	108.6	17.07	-15.0	50.4
	2006-299T15:53:36.80	26-Oct-06	15:54:41	24	1440	485.898.3	483.323.3	-28.8	-21.9	5.803	5.778	0.542	10.6	70.9	109.1	17.04	-15.0	54.2

PLAYBACK TIMELINE

031TI (T20) Playback Timeline

Created Oct. 13, 2006

Event or Observation	Observation Type (APGEN)	Observation Record Start Time (yyyy-dddThh:mm:ss) (SCET)	Record Start Time Epoch (hh:mm)	Start Playback (Ground UTC)		Start Playback (Pacific Time)	
				Best Estimate	~Latest Estimate	Best Estimate	~Latest Estimate
CAPS_031SA_SURVEY001_RIDER	CAPS_16000	2006-297T18:26:00	-00T21:32	26-Oct Thu 05:59 AM	Thu 06:50 AM	25-Oct Wed 10:59 PM	Wed 11:50 PM
CDA_031DR_1904DUSTB203_RIDER	CDA_524	2006-297T18:26:00	-00T21:32	26-Oct Thu 05:59 AM	Thu 06:50 AM	25-Oct Wed 10:59 PM	Wed 11:50 PM
INMS_031OT_MAGTAIL002_CAPS	INMS_1498	2006-297T18:26:00	-00T21:32	26-Oct Thu 05:59 AM	Thu 06:50 AM	25-Oct Wed 10:59 PM	Wed 11:50 PM
RPWS_031OT_MAGTAIL004_CAPS	RPWS_30464	2006-297T18:26:00	-00T21:32	26-Oct Thu 05:59 AM	Thu 06:50 AM	25-Oct Wed 10:59 PM	Wed 11:50 PM
MIMI_031OT_MAGTAIL005_RIDER	MIMI_8000	2006-297T18:26:01	-00T21:31	26-Oct Thu 05:59 AM	Thu 06:50 AM	25-Oct Wed 10:59 PM	Wed 11:50 PM
CIRS_031TI_CLOUDMAP001_VIMS	CIRS_4000	2006-297T19:18:07	-00T20:39	26-Oct Thu 06:21 AM	Thu 07:14 AM	25-Oct Wed 11:21 PM	Thu 12:14 AM
ISS_031TI_CLOUDMAP001_VIMS	ISS_Phot_1_by_1	2006-297T19:18:07	-00T20:39	26-Oct Thu 06:21 AM	Thu 07:14 AM	25-Oct Wed 11:21 PM	Thu 12:14 AM
UVIS_031TI_CLOUDMAP201_VIMS	UVIS_5032	2006-297T19:18:07	-00T20:39	26-Oct Thu 06:21 AM	Thu 07:14 AM	25-Oct Wed 11:21 PM	Thu 12:14 AM
VIMS_031TI_CLOUDMAP001_PRIME	VIMS_18432	2006-297T19:18:07	-00T20:39	26-Oct Thu 06:21 AM	Thu 07:14 AM	25-Oct Wed 11:21 PM	Thu 12:14 AM
MAG_031OT_SURVEY001_PRIME	MAG_1976	2006-297T19:50:08	-00T20:07	26-Oct Thu 06:46 AM	Thu 07:42 AM	25-Oct Wed 11:46 PM	Thu 12:42 AM
INMS_031CO_TINTERACT001_CAPS	INMS_1498	2006-297T19:54:56	-00T20:03	26-Oct Thu 06:50 AM	Thu 07:46 AM	25-Oct Wed 11:50 PM	Thu 12:46 AM
MAG_031CO_TINTERACT001_MAPS	MAG_1976	2006-297T19:54:56	-00T20:03	26-Oct Thu 06:50 AM	Thu 07:46 AM	25-Oct Wed 11:50 PM	Thu 12:46 AM
MIMI_031CO_SURVEY008_RIDER	MIMI_8000	2006-297T19:54:56	-00T20:03	26-Oct Thu 06:50 AM	Thu 07:46 AM	25-Oct Wed 11:50 PM	Thu 12:46 AM
RPWS_031SA_OUTSURVEY001_PRIME	RPWS_30464	2006-297T19:54:56	-00T20:03	26-Oct Thu 06:50 AM	Thu 07:46 AM	25-Oct Wed 11:50 PM	Thu 12:46 AM
INMS_031TI_T20INBD001_RADAR	INMS_1498	2006-298T03:58:07	-00T11:59	26-Oct Thu 10:04 AM	Thu 10:27 AM	26-Oct Thu 03:04 AM	Thu 03:27 AM
RADAR_031OT_T20AWARM001_RIDER	RADAR_364800	2006-298T07:28:07	-00T08:29	26-Oct Thu 10:34 AM	Thu 10:58 AM	26-Oct Thu 03:34 AM	Thu 03:58 AM
CIRS_031TI_MEDRES001_VIMS	CIRS_4000	2006-298T08:28:07	-00T07:29	26-Oct Thu 10:42 AM	Thu 11:06 AM	26-Oct Thu 03:42 AM	Thu 04:06 AM
ISS_031TI_MEDRES001_VIMS	ISS_Phot_1_by_1	2006-298T08:28:07	-00T07:29	26-Oct Thu 10:42 AM	Thu 11:06 AM	26-Oct Thu 03:42 AM	Thu 04:06 AM
VIMS_031TI_MEDRES001_PRIME	VIMS_18432	2006-298T08:28:07	-00T07:29	26-Oct Thu 10:42 AM	Thu 11:06 AM	26-Oct Thu 03:42 AM	Thu 04:06 AM
RADAR_031TI_T20AINRAD101_PRIME	RADAR_364800	2006-298T10:28:07	-00T05:29	26-Oct Thu 11:24 AM	Thu 11:51 AM	26-Oct Thu 04:24 AM	Thu 04:51 AM
CAPS_031TI_T20INBD001_PRIME	CAPS_16000	2006-298T13:58:07	-00T01:59	26-Oct Thu 12:03 PM	Thu 12:31 PM	26-Oct Thu 05:03 AM	Thu 05:31 AM
MAG_031TI_MAGTITAN001_PRIME	MAG_1976	2006-298T13:58:07	-00T01:59	26-Oct Thu 12:03 PM	Thu 12:31 PM	26-Oct Thu 05:03 AM	Thu 05:31 AM
MIMI_031TI_T20EXTINB001_CAPS	MIMI_8000	2006-298T13:58:07	-00T01:59	26-Oct Thu 12:03 PM	Thu 12:31 PM	26-Oct Thu 05:03 AM	Thu 05:31 AM
RPWS_031TI_T20INTRMED001_PRIME	RPWS_30464	2006-298T13:58:07	-00T01:59	26-Oct Thu 12:03 PM	Thu 12:31 PM	26-Oct Thu 05:03 AM	Thu 05:31 AM
CAPS_031TI_T20CLOSE001_PRIME	CAPS_16000	2006-298T14:58:07	-00T00:59	26-Oct Thu 12:21 PM	Thu 12:50 PM	26-Oct Thu 05:21 AM	Thu 05:50 AM
INMS_031TI_T20CLOSE002_PRIME	INMS_1498	2006-298T14:58:07	-00T00:59	26-Oct Thu 12:21 PM	Thu 12:50 PM	26-Oct Thu 05:21 AM	Thu 05:50 AM
MIMI_031TI_T20CLOSE002_CAPS	MIMI_8000	2006-298T14:58:07	-00T00:59	26-Oct Thu 12:21 PM	Thu 12:50 PM	26-Oct Thu 05:21 AM	Thu 05:50 AM
CIRS_031TI_COMPMPA101_VIMS	CIRS_4000	2006-298T15:48:07	-00T00:09	26-Oct Thu 12:36 PM	Fri 02:30 PM	26-Oct Thu 05:36 AM	Fri 07:30 AM
ISS_031TI_COMPMPA101_VIMS	ISS_Phot_1_by_1	2006-298T15:48:07	-00T00:09	26-Oct Thu 12:36 PM	Fri 02:30 PM	26-Oct Thu 05:36 AM	Fri 07:30 AM
VIMS_031TI_COMPMPA101_PRIME	VIMS_18432	2006-298T15:48:07	-00T00:09	26-Oct Thu 12:36 PM	Fri 02:30 PM	26-Oct Thu 05:36 AM	Fri 07:30 AM
CDA_031DR_1904DUSTC203_RIDER	CDA_524	2006-298T15:51:30	-00T00:06	26-Oct Thu 12:38 PM	Fri 02:32 PM	26-Oct Thu 05:38 AM	Fri 07:32 AM
CIRS_031TI_HIGHRESNA101_VIMS	CIRS_4000	2006-298T16:40:07	00T00:42	26-Oct Thu 12:58 PM	Fri 02:54 PM	26-Oct Thu 05:58 AM	Fri 07:54 AM
VIMS_031TI_HIGHRESNA101_PRIME	VIMS_18432	2006-298T16:40:07	00T00:42	26-Oct Thu 12:58 PM	Fri 02:54 PM	26-Oct Thu 05:58 AM	Fri 07:54 AM
ISS_031TI_HIGHRESNA101_VIMS	ISS_Phot_1_by_1	2006-298T16:41:07	00T00:43	26-Oct Thu 12:58 PM	Fri 02:55 PM	26-Oct Thu 05:58 AM	Fri 07:55 AM
CAPS_031TI_T20EXTOUT101_PRIME	CAPS_16000	2006-298T16:58:07	00T01:00	26-Oct Thu 02:19 PM	Fri 03:06 PM	26-Oct Thu 07:19 AM	Fri 08:06 AM
INMS_031TI_T20OUTBD001_RADAR	INMS_1498	2006-298T16:58:07	00T01:00	26-Oct Thu 02:19 PM	Fri 03:06 PM	26-Oct Thu 07:19 AM	Fri 08:06 AM
CIRS_031TI_REGMAPNA101_ISS	CIRS_4000	2006-298T17:58:07	00T02:00	27-Oct Fri 01:51 PM	Fri 03:38 PM	27-Oct Fri 06:51 AM	Fri 08:38 AM
ISS_031TI_REGMAPNA101_PRIME	ISS_Phot_1_by_1	2006-298T17:58:07	00T02:00	27-Oct Fri 01:51 PM	Fri 03:38 PM	27-Oct Fri 06:51 AM	Fri 08:38 AM
MAG_031CO_TINTERACT002_MAPS	MAG_1976	2006-298T17:58:07	00T02:00	27-Oct Fri 01:51 PM	Fri 03:38 PM	27-Oct Fri 06:51 AM	Fri 08:38 AM
MIMI_031CO_TINTERACT002_RIDER	MIMI_8000	2006-298T17:58:07	00T02:00	27-Oct Fri 01:51 PM	Fri 03:38 PM	27-Oct Fri 06:51 AM	Fri 08:38 AM
RPWS_031CO_TINTERACT101_CAPS	RPWS_30464	2006-298T17:58:07	00T02:00	27-Oct Fri 01:51 PM	Fri 03:38 PM	27-Oct Fri 06:51 AM	Fri 08:38 AM
CIRS_031TI_MIRLMBMAP004_PRIME	CIRS_4000	2006-298T20:28:07	00T04:30	27-Oct Fri 02:31 PM	Fri 04:22 PM	27-Oct Fri 07:31 AM	Fri 09:22 AM
CIRS_031TI_MIRLMBMAP004_SI	ISS_SUPPORT_IMAGI	2006-298T20:28:07	00T04:30	27-Oct Fri 02:31 PM	Fri 04:22 PM	27-Oct Fri 07:31 AM	Fri 09:22 AM
ISS_031TI_MIRLMBMAP004_CIRS	ISS_Phot_1_by_1	2006-298T20:28:07	00T04:30	27-Oct Fri 02:31 PM	Fri 04:22 PM	27-Oct Fri 07:31 AM	Fri 09:22 AM
VIMS_031TI_MIRLMBMAP003_CIRS	VIMS_18432	2006-298T20:28:07	00T04:30	27-Oct Fri 02:31 PM	Fri 04:22 PM	27-Oct Fri 07:31 AM	Fri 09:22 AM
CIRS_031TI_DARKSIDE001_VIMS	CIRS_4000	2006-298T23:28:07	00T07:30	27-Oct Fri 03:05 PM	Fri 05:01 PM	27-Oct Fri 08:05 AM	Fri 10:01 AM
ISS_031TI_DARKSIDE001_VIMS	ISS_Phot_1_by_1	2006-298T23:28:07	00T07:30	27-Oct Fri 03:05 PM	Fri 05:01 PM	27-Oct Fri 08:05 AM	Fri 10:01 AM
VIMS_031TI_DARKSIDE001_PRIME	VIMS_18432	2006-298T23:28:07	00T07:30	27-Oct Fri 03:05 PM	Fri 05:01 PM	27-Oct Fri 08:05 AM	Fri 10:01 AM
CIRS_031TI_COMPMPA001_VIMS	CIRS_4000	2006-298T23:58:07	00T08:00	27-Oct Fri 03:18 PM	Fri 05:15 PM	27-Oct Fri 08:18 AM	Fri 10:15 AM
ISS_031TI_COMPMPA001_VIMS	ISS_Phot_1_by_1	2006-298T23:58:07	00T08:00	27-Oct Fri 03:18 PM	Fri 05:15 PM	27-Oct Fri 08:18 AM	Fri 10:15 AM
UVIS_031TI_COMPMPA001_VIMS	UVIS_5032	2006-298T23:58:07	00T08:00	27-Oct Fri 03:18 PM	Fri 05:15 PM	27-Oct Fri 08:18 AM	Fri 10:15 AM
VIMS_031TI_COMPMPA001_PRIME	VIMS_18432	2006-298T23:58:07	00T08:00	27-Oct Fri 03:18 PM	Fri 05:15 PM	27-Oct Fri 08:18 AM	Fri 10:15 AM
CDA_031RI_1804RINGM002_RIDER	CDA_524	2006-299T00:59:44	00T09:01	27-Oct Fri 03:29 PM	Fri 05:29 PM	27-Oct Fri 08:29 AM	Fri 10:29 AM
CDA_031DR_1706DUST186_RIDER	CDA_524	2006-299T02:59:44	00T11:01	27-Oct Fri 03:49 PM	Fri 05:52 PM	27-Oct Fri 08:49 AM	Fri 10:52 AM
MAG_031CO_TINTERACT006_MAPS	MAG_1976	2006-299T03:07:00	00T11:09	26-Oct Thu 01:00 PM	Thu 01:00 PM	26-Oct Thu 06:00 AM	Thu 06:00 AM
INMS_031SA_SURVEY002_RIDER	INMS_1498	2006-299T03:58:07	00T12:00	26-Oct Thu 01:05 PM	Thu 01:06 PM	26-Oct Thu 06:05 AM	Thu 06:06 AM
MAG_031CO_TINTERACT005_MAPS	MAG_1976	2006-299T07:20:00	00T15:22	26-Oct Thu 01:26 PM	Thu 01:27 PM	26-Oct Thu 06:26 AM	Thu 06:27 AM